UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/634,947	08/07/2000	James Pei-Man She	016660-049	2827

21839 7590 03/26/2003

BURNS DOANE SWECKER & MATHIS L L P
POST OFFICE BOX 1404
ALEXANDRIA, VA 22313-1404

EXAMINER
ADEGORUSI, ADEKUNLE O

ART UNIT	PAPER NUMBER
2153	

DATE MAILED: 03/26/2003

5

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/634,947	SHE ET AL.	
	Examiner	Art Unit	
	Adekunle O Adegorusi	2153	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-28 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-28 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Objections

1. Claim 13, line 2 is objected to because of the following informalities: "the quality the streams provided by the". The appropriate sentence should be "the quality of the streams provided by the". Appropriate correction is required.

2. Claim 25 is objected to because of the following informalities: "possible source gateways and then on the basis firstly of the stream quality". It could be stated as "possible source gateways and then on the basis of the stream quality". Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

4. The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5. Claim 27 is rejected under 35 U.S.C. 102(e) as being anticipated by Shur et al. (U.S. Patent 6259701). Shur et al. anticipates a data transmission network comprising a plurality of network domains wherein some of the network domains are unicast domains (column 2 line 64 – column 3 line 11) and the remainder of the domains are multicast domains (see figure 1 and column 3 lines 28-32), the network comprising a plurality of gateways (unicast routers (UR) and multicast-unicast server) located at the boundaries and the gateways at least at the boundaries between a unicast domain and a multicast domain (multicast-unicast server) being provided with software interface means for changing the address type of a data packet from unicast to multicast or vice versa (column 1 line 65 – column 2 line 2 and column 3 lines 42-45).

6. Claim 28 is rejected under 35 U.S.C. 102(e) as being anticipated by Yates et al. (U.S. Patent 6167438). Yates anticipates a data transmission network comprising a plurality of gateways (cache servers), each gateway having a number of associated clients, wherein each gateway is capable of acting as a source of data content itself (column 7 lines 24-27) and is capable of sourcing data content from another gateway (column 7 lines 36-45).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1-2 and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burns et al. (U.S. Patent 6324182), and further in view of Haggerty et al. (U.S. Patent 6331983).

9. Regarding claims 1 and 14, Burns et al. teaches a system for providing streaming data from a server to multiple clients comprising a gateway (cache server) located between a server (content server) and clients (subscriber PCs), wherein the gateway includes means for obtaining streaming data from the server (content server) upon receipt of a first request for a stream from any of the clients (column 7 line 66 – column 8 line 4).

Burns et al., however, does not teach the means for providing the stream from the gateway (local service provider) to second and subsequent clients requesting the stream. Nonetheless, Haggerty et al. teaches a method and apparatus for controlling the flow of multicast traffic on a communications network (column 1 lines 4-9).

Haggerty further teaches a means for supplying a second and subsequent client with a data stream already being supplied to a first client (column 12 lines 6-15 and figure 2; here, when Mcast host 125 joins group X that is already receiving packets from Mcast host 120, a path is created so that the Mcast router 131 which Mcast host 125 is connected to can supply the packets that group X are receiving to Mcast host 125).

Controlling the flow of multicast traffic in a time efficient manner would be a desirable feature in the art. Thus, it would have been obvious to one with ordinary skill in the art to modify the teachings of Burns et al. with the teachings of Haggerty et al. by making it possible for additional clients to request a stream that is being provided in order to make multiple clients access the same information in a time efficient manner.

10. Regarding claims 2 and 15, Burns et al. teaches a system wherein the gateway has a list of the information that was received from the server (column 6 lines 61-65). Burns et al. also teaches that the gateway compares the list to the client's request, and has the server providing the information to the gateway if the gateway does not have it (column 7 line 66 – column 8 line 4 and column 8 lines 23-40). Burns et al further teaches the gateway that can also provide the information to the client if it has the requested data or have the server provide the data to the client (column 6 lines 61-65 and column 8 lines 23-40).

11. Claims 3-5 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burns et al. and Haggerty et al., and further in view of Shur et al.

12. Regarding claim 3, while Burns et al. and Haggerty et al. disclose the invention as discussed in paragraphs 8-11 above, Burns et al., does not teach that the gateway has a means for changing the address type of the data packets of a stream to a multicast address for supplying requested information to the clients.

Shur et al., on the other hand, teaches a system of accessing a multicast network from a unicast network (column 1 lines 7-10). Shur et al. further teaches that unicast packets received by the MUS server are address-translated to the appropriate multicast session address and supplied to the clients that requested the information (column 1 line 65 – column 2 line 7 and column 3 lines 33-36).

13. Having a gateway that has the capability to convert addresses of data packets to a multicast address type in order to access information in another multicast network would have been a desirable feature in the art. It would have been obvious to one with ordinary skill in the art

to modify the teachings of Burns et al. and Haggerty et al. with the teachings of Shur et al. by having a gateway (MUS server) that has the capability to convert addresses of data packets to a multicast address type in order for clients to be able to access information that is in a multicast network (column 1 line 67 – column 2 line 7).

14. Regarding claims 4 and 17, Haggerty et al. teaches, column 4 lines 34-39, that when the TTL is zero, the packets do not leave the sending node, which explains the logical multicast loop back. Since the packet would not be sent out of the sending node but be kept within itself if the TTL is zero, it implies that duplicates would be created when the TTL is zero. Furthermore, it is inherent to create duplicates of data packets since they will have to be sent to multiple clients in a multicast network.

15. Regarding claims 5 and 18, Shur et al. teaches a software interface (this is in the multicast-unicast server) that changes the address type (multicast type) of the duplicated data packets from multicast to unicast prior to output to the client (column 3 lines 42-45).

16. Claims 6 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burns et al., Haggerty et al. and Shur et al and further in view of Luczycki et al. (U.S. Patent 6,523,069).

17. As to claims 6 and 19, Burns et al., Shur et al. and Haggerty et al. do not teach a system that facilitates the conversion of multicast addresses to a second multicast address.

However, Luczycki et al. teaches a system (network traffic exchange facility) that has a software interface that changes the address type of the data packets to a second multicast address

prior to sending to the client wherein the second multicast address corresponds to the clients who are a group within a multicast enabled network (column 4 lines 28-34). The network traffic exchange facility is where independent networks can exchange Internet protocol (IP) multicast data streams which implies that the sources multicast address type is changed to another multicast address type. The address change occurs when the data stream from the source node exchanges packets thereby giving the packets from the source a new address that would be sent to the requesting clients.

18. Changing one multicast address to a second multicast address in order to send data streams from a source in a multicast network to a client in another multicast network would be a desirable feature in the art. Therefore, it would have been obvious to one with ordinary skill in the art to modify the teachings of Burns et al., Haggerty et al. and Shur et al. with the teachings of Luczycki et al. by creating a facility where multicast data streams can be exchanged. This would make it possible to send data streams from a source in one multicast network to a client in another multicast network.

19. Claims 7-8 and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yates et al. (U.S. Patent 6,167,438), and further in view of Haggerty et al. (U.S. Patent 6,331,983).

20. Regarding claims 7 and 20, Yates et al. teaches a system and method for providing streaming (transmitting) data from a server to multiple clients (column 1 lines 38-48), comprising a plurality of gateways (column 6 lines 35-49; the routers or the cache servers or

when combined together) located between the server and the client (column 6 lines 35-49). Each client being associated with one gateway (see fig. 1; each of the clients are associated with gateways) wherein each gateway is provided with means for sourcing a data stream from a server (home server) (column 7 lines 36-45) or another gateway upon receipt of a first request for a stream (column 7 lines 18-45; since the cache servers or routers would send the request to another router or cache server if it does not have the requested information, it implies that the cache server that has the information would provide the data to the client through the cache server that forwarded the request). Yates et al. also teaches a method wherein each gateway is provided with means for deciding upon receipt of a request from a client for a data stream whether the gateway can supply the data stream itself and, if not, for deciding whether a neighboring gateway exists from which the data stream may be obtained (column 7 lines 31-45).

21. Yates et al., however, does not explicitly teach the means for supplying a second or subsequent client with a data stream already being supplied to a first client. Nonetheless, in a similar field of endeavor, Haggerty et al. teaches a method and apparatus for controlling the flow of multicast traffic on a communications network (column 1 lines 4-9). Haggerty further teaches a means for supplying a second or subsequent client with a data stream already being supplied to a first client (column 12 lines 6-15 and figure 2; here, when Mcast host 125 joins group X that is already receiving packets from Mcast host 120, a path is created so that the Mcast router 131 which Mcast host 125 is connected to can supply the packets that group X are receiving to Mcast host 125).

Supplying a second or subsequent client with a data stream already being supplied to a first client in order to enable the second client to access the required information in a time-

efficient manner would have been a desirable feature in the art. Thus, it would have been obvious to one with ordinary skill in the art to modify the teachings of Yates et al. with the teachings of Haggerty et al. by making the gateway supply a requesting client with packets that it is already supplying to another client in order to be able to provide packets/information to groups of clients. This would make it possible for the second or subsequent client to quickly access information that is needed.

22. Regarding claim 8, Yates discloses, a gateway that includes a list (identity) of all neighboring gateways (column 8 lines 29-31), a database (where the cache copies are stored) listing all the data streams currently being supplied by the neighboring gateways (column 13 lines 59-62, column7 lines 9-17; this implies that a listing of documents currently being supplied are stored on a cache server) and a database of all the streams being supplied by the gateway (column 7 lines 9-17).

23. Regarding claim 21, Yates et al. teaches a method wherein when a request is a first request to a gateway for a data stream the gateway decides whether a neighboring gateway exists from which the data stream may be obtained (column 7 lines 31-35). The gateway is a router that does not have a cache server.

24. Claims 9-10 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yates et al., Haggerty et al.; and further in view of Lin et al. (U.S. Patent 6,405,256).

As to claims 9 and 10, Yates et al. and Haggerty et al. do not teach a gateway reporting to each neighboring gateway when it starts to supply a new data stream and where a gateway is provided with the means for selecting between two or more possible gateways as the source of a data stream requested by a client.

However, in a similar field of endeavor, Lin et al. teaches a system of transmitting large files between a server and a client over a network (column 1 lines 8-13). Lin et al. further teaches a caching server reporting (sending a request signal) to each neighboring gateway when it starts to supply a new data stream (column 8 lines 4-10) and where a gateway is provided with the means for selecting between two or more possible gateways as the source of a data stream requested by a client (column 7 line 66 – column 8 line 21; here the gateways (cache servers) are different sources that the client can get data from).

Having a gateway reporting to each neighboring gateway when it starts to supply a new data stream in order to make the neighboring gateways know that it is sending data would have been a desirable feature in the art. Thus, it would have been obvious to one with ordinary skill in the art to modify the teachings of Yates et al. and Haggerty et al. with the teachings of Lin et al. by having a means for a gateway to report to neighboring gateways in order to make the other gateways become aware that it is busy sending data streams to the client.

Furthermore it would have been obvious to one with ordinary skill in the art to modify the teachings of Yates et al. and Haggerty et al. with the teachings of Lin et al. by having a means of selecting between two or more possible gateways as the source of a data stream requested by a client. This would prevent excessive loading of a gateway.

25. Regarding claim 22, Yates et al. and Haggerty et al., do not teach a method wherein a gateway starts to serve a data stream for the first time, the gateway reporting to all neighboring gateways that it is serving the data stream. On the other hand, Lin et al. teaches a method wherein when a gateway starts to serve a data stream, the gateway reports (sends a request signal) to a neighboring gateway that the gateway needs to serve its segment of data (column 7 line 66 – column 8 line 9). The sending of a request signal is a method of letting the other server know that the gateway is sending a data stream and that it is the turn of the other gateway to provide its segment of the data stream.

Having a gateway report to neighboring gateways that it is serving a data stream in order to let other gateways serve segments of the data would have been a desirable feature in the art. Thus, it would have been obvious to one with ordinary skill in the art to modify the teachings of Yates et al. and Haggerty et al. with the teachings of Lin et al. by making it possible to have a gateway report to all neighboring gateways that it is serving the data stream in order to let other gateways serve segments of the data.

26. Regarding claim 23, Lin et al. teaches a method wherein a gateway selects between two or more gateways (cache servers) that are possible sources of a requested data stream (column 7 line 66 – column 8 line 9). The selection process is done after a gateway (caching server) has finished sending its segment and sends a signal to another gateway to have its segment sent to the client.

27. Claims 11-13 and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yates et al., Haggerty et al. and Lin et al., and further in view of O'Neil et al. (U.S. Patent 6,128,279).

Regarding claim 11, Yates et al., Haggerty et al. and Lin et al. do not teach the means for selecting a gateway which comprises eliminating sources operating at or beyond maximum loading, the quality of the streams supplied by the source gateways, the loading of the possible source gateway and the communication latency between the requesting and the source gateway.

However, in a similar field of endeavor, O'Neil et al. teaches a system for implementing peer-to-peer load balancing among plural network servers (column 4 lines 63-65). O'Neil further teaches a client sending a request to a gateway (server), the gateway determines if the load that it is still processing exceeds maximum loading (predetermined level) (column 6 lines 11-22), the loading of the possible source gateways (column 6 lines29-61), the communication latency between the source gateways and the requesting gateway (column 7 lines 4-19; the communication latency corresponds to the server not responding).

A gateway having the capability to access another gateway based on the loading of the other gateways and the communication latency between gateways in order to make the system more time efficient, would have been a desirable feature in the art. Thus, it would have been obvious to one with ordinary skill in the art to modify the teachings of Yates et al., Haggerty et al. and Lin et al. with the teachings of O'Neil et al. by incorporating the means for the gateways to access another gateway based on the loading of the other gateways and the communication latency between a source gateway and a requesting gateway in order to make the system more time efficient.

28. Claim 12 is rejected based on the same rationale for rejecting claim 11.

29. Claim 13 is being rejected based on the same rationale for rejecting claim 12. The inventor can choose to eliminate the overloaded or maximum loaded sources, and later choose to make the quality of the streams provided by the possible source gateways, the loading of the source gateway can be the next criteria, and the communication latency the final criteria if stream quality and source gateway loading are all equal. It would have been obvious to one with ordinary skill in the art to have the criteria (depends of designer's choice) for choosing a source gateway executed in a certain order in order to eliminate possible source gateways.

30. Claim 24 was rejected under 35 U.S.C. 103(a) as being unpatentable over Yates et al., Haggerty et al. and Lin et al., and further in view of O'Neil et al. (U.S. Patent 6,128,279).

31. Yates et al. and Haggerty et al. do not teach the means for selecting a gateway which comprises eliminating sources operating at or beyond maximum loading, the quality of the streams supplied by the source gateways, the loading of the possible source gateway and the communication latency between the requesting and the source gateway.

However, in a similar field of endeavor, O'Neil et al. teaches a system for implementing peer-to-peer load balancing among plural network servers (column 4 lines 63-65). O'Neil further teaches a client sending a request to a gateway (server), the gateway determines if the load that it is still processing exceeds maximum loading (predetermined level) (column 6 lines 11-22), the loading of the possible source gateways (column 6 lines29-61), the communication

latency between the source gateways and the requesting gateway (column 7 lines 4-19; the communication latency is the server not responding).

The means for selecting a gateway which comprises eliminating sources operating at or beyond maximum loading, the quality of the streams supplied by the source gateways, the loading of the possible source gateway and the communication latency between the requesting and the source gateway, in order to make the whole system operate in a time-efficient manner would have been a desirable feature in art. Thus, it would have been obvious to one with ordinary skill in the art to modify the teachings of Yates et al., Haggerty et al. and Lin et al. with the teachings of O'Neil et al. by incorporating the means for the gateways to access another gateway based on the loading of the gateways and the communication latency between gateways in order to make the system more time efficient. This is because a stream of poor quality would require it to be resent, a gateway with bad latency would take a longer time to reply and an overloaded gateway would be slow.

32. Claim 25 is being rejected based on the same rationale for rejecting claim 24. The inventor can choose to eliminate the overloaded or maximum loaded sources, and later choose to make the quality of the streams provided by the possible source gateways the next criteria, the loading of the source gateway the next criteria, and the communication latency the final criteria if stream quality and source gateway loading are all equal. It would have been obvious to one with ordinary skill in the art to have the criteria for choosing a source gateway executed in a certain order in order to eliminate possible source gateways thereby making the gateways operate faster.

33. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shur et al., and further in view of Luczycki et al. Shur et al. teaches a multicast-unicast server that has the means for changing an address type of a data packet from unicast to multicast (column 1 line 65 – column 2 line 2), or multicast to unicast (column 3 lines 42-45), or from a first unicast address to a second unicast address (column 3 lines 45-54).

Shur et al. does not teach changing of a first multicast address to a second multicast address, however, Luczycki et al. teaches a network traffic exchange facility through which independent networks can exchange internet protocol multicast data streams. The exchange of the multicast data streams implies the changing from a first multicast address to a second multicast address.

Thus, having the means to convert a first multicast address to a second multicast address in order to access multicast clients from another multicast network would have been a desirable feature in the art. It would have been obvious to one with ordinary skill in the art to modify the teaches of Shur et al. with the teachings of Luczycki et al. by making the system of Shur et al. have the capability to change a first multicast address to a second multicast address. This would make the system able to access multicast clients from another multicast network.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Adekunle O Adegorusi whose telephone number is (703) 305-7721. The examiner can normally be reached on 8:30 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenton Burgess can be reached on (703) 305-4792. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-8889 for regular communications and (703) 746-8889 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is N/A.

AOA
March 11, 2003

GLENTON B. BURGESS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100